

# INTRODUCTION

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## Site Location

The West Valley Demonstration Project (WVDP or Project) is located in western New York State, about 30 miles (50 kilometers [km]) south of Buffalo, New York (Fig. INT-1). The WVDP facilities occupy a security-fenced area of about 167 acres (68 hectares [ha]) within the 3,338-acre (1,351 ha) Western New York Nuclear Service Center (WNYNSC) located primarily in the town of Ashford in northern Cattaraugus County. The security-fenced area is specifically referred to as the Project premises.

## General Environmental Setting

**Climate.** Although extremes of 98.6°F (37°C) and -43.6°F (-42°C) have been recorded in western New York, the climate is moderate, with an average annual temperature (1971–2000) of 48°F (8.9°C). Precipitation is markedly influenced by Lake Erie to the west and, to a lesser extent, by Lake Ontario to the north. Regional winds are generally from the west and south at about 9 miles per hour (4 meters/second).

**Ecology.** The WNYNSC lies within the northern deciduous forest biome, and the diversity of its vegetation is typical of the region. Equally divided between forest and open land, the site provides a habitat especially attractive to white-tailed deer and various indigenous migratory birds, reptiles, and small mammals. No species on the federal endangered species list are known to reside on the WNYNSC.

**Geology and Hydrology.** The Project lies on New York State's Allegheny Plateau at an average elevation of about 1,300 feet (400 meters). The underlying geology includes a sequence of glacial sediments above shale bedrock. The Project is drained by three small streams (Franks Creek, Quarry Creek, and Erdman Brook) and is divided by a stream valley (Erdman Brook) into two general areas: the north plateau and the south plateau.

Franks Creek, which receives drainage from Erdman Brook and Quarry Creek, flows into Buttermilk Creek, which enters Cattaraugus Creek and leaves the WNYNSC. (See Figs. A-1 and A-5.) Cattaraugus Creek ultimately drains into Lake Erie, to the northwest.

## Relevant Demographics

Although several roads and a railway approach or pass through the WNYNSC, the public is prohibited from accessing the WNYNSC. A limited public deer hunting program managed by the New York State Energy Research and Development Authority (NYSERDA) is conducted on a year-to-year basis in designated areas on the WNYNSC. No public access is allowed on the WVDP Project premises.

Land near the WNYNSC is used primarily for agriculture and arboriculture. Downstream of the WNYNSC, Cattaraugus Creek is used locally for swimming, canoeing, and fishing. Although some water is taken from the creek to irrigate nearby golf course greens and tree farms, no public drinking water is drawn from the creek before it flows into Lake Erie. Water from Lake Erie is used as a public drinking water supply.

The communities of West Valley, Riceville, Ashford Hollow, and the village of Springville are located within approximately 5 miles (8 km) of the Project. The nearby population, approximately 9,200 residents within 6.2 miles (10 km) of the Project, relies largely on an agricultural economy. No major industries are located within this area. The WVDP is one of the largest employers in Cattaraugus County.

## Historic Timeline of the WNYNSC and the WVDP

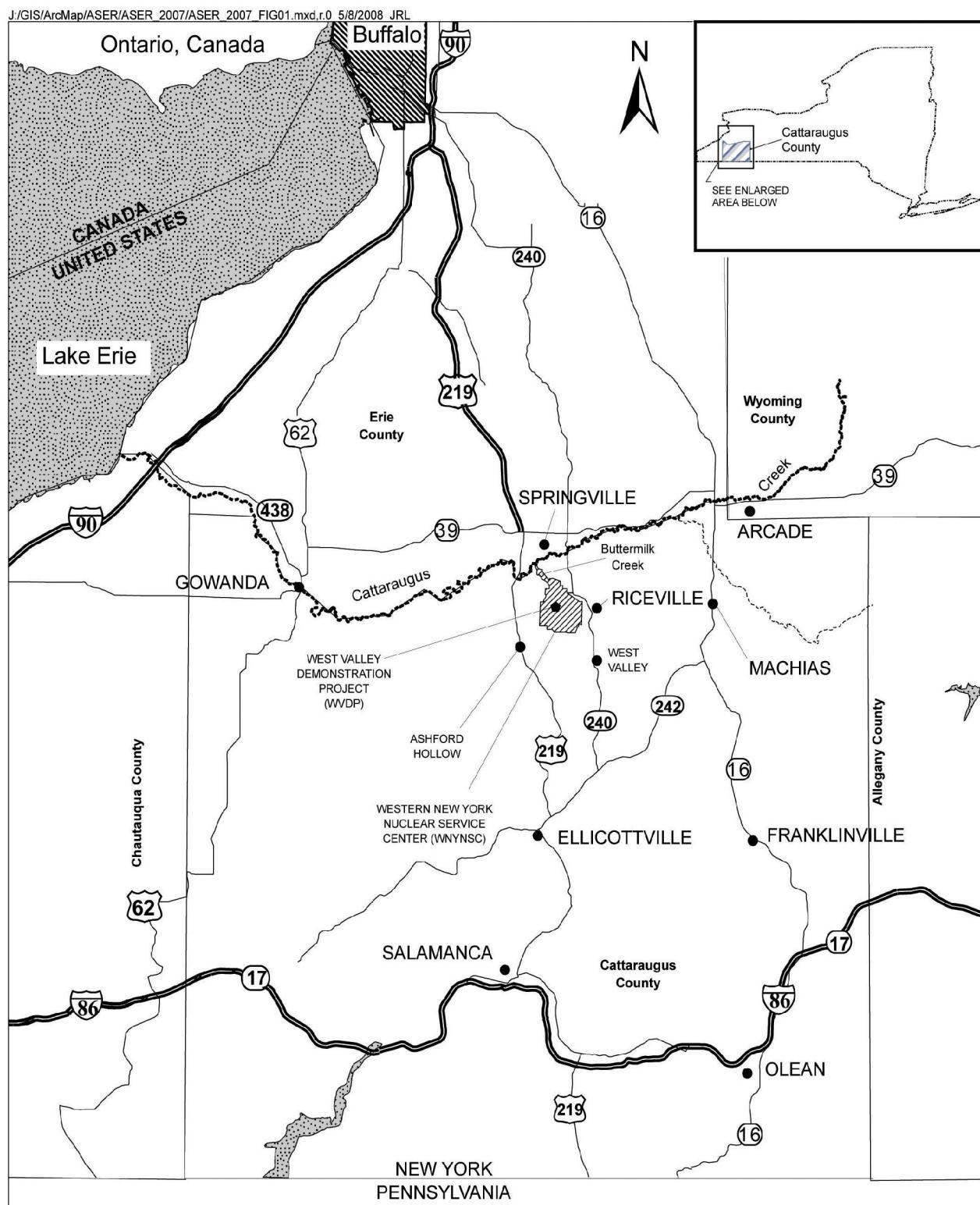
The following summary, presented in Table INT-1, depicts a historic timeline for the WNYNSC and the WVDP beginning with the establishment of the WNYNSC as a commercial nuclear fuel reprocessing facility, to the creation of the WVDP, to the current Project mission. The summary includes significant legal directives, major activities and accomplishments.

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*A reader opinion survey has been inserted in this report. If it is missing, please contact the WVDP Communications Department at (716) 942-2152. Additional Project information is available on the internet at <http://www.wv.doe.gov>.*

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**FIGURE INT-1**  
**Location of the Western New York Nuclear Service Center**



**TABLE INT-1**  
**Historic Timeline of the WNYNSC and the WVDP**

Year	Activity
1954	The Federal Atomic Energy Act promoted commercialization of reprocessing spent nuclear fuel.
1959	New York State (NYS) established the Office of Atomic Development (OAD) to coordinate the atomic industry.
1961	The NYS OAD acquired 3,345 acres (1,332 hectares) of land in Cattaraugus County, Town of Ashford (near West Valley), in Western New York and established the Western New York Nuclear Service Center (WNYNSC).
1962	Davidson Chemical Company established Nuclear Fuels Services, Inc. (NFS) as a nuclear fuel reprocessing company, and reached an agreement with NYS to lease the WNYNSC (also referred to as "the Center").
1966	NFS constructed and operated the commercial nuclear fuel reprocessing facility at the WNYNSC from 1966 to 1972. NFS processed 640 metric tons of spent reactor fuel at the facility, generating 660,000 gallons (2.5 million liters) of highly radioactive liquid waste. NFS operated a 5-acre landfill, the "U.S. Nuclear Regulatory Commission (NRC)-Licensed Disposal Area (NDA)" for disposal of waste generated from the reprocessing operations. In addition, a 15-acre commercial disposal area, the "State Licensed Disposal Area (SDA)" regulated by NYS agencies, under delegation of authority from the NRC, accepted low-level radioactive waste (LLW) from operations at the Center and from off-site facilities from 1963 until 1975.
1972	In 1972, while the plant was closed for modifications, more rigorous regulatory requirements were imposed upon fuel reprocessing facilities. NFS determined the costs to meet regulatory requirements of spent nuclear fuel reprocessing were not economically feasible. NFS notified the New York State Energy Research and Development Authority (NYSERDA) in 1976 that they would discontinue reprocessing and would not renew the lease that would expire at the end of 1980.
1975	Water infiltrated into the SDA trenches and waste burial operations ceased. Between 1975 and 1981, NFS pumped, treated, and released liquids to the adjacent stream. Redesigning the covers reduced, but did not eliminate, water accumulation in the trenches.
1980	Before discontinuing fuel reprocessing operations in 1975, NFS had accepted 750 spent fuel assemblies which remained in storage in the on-site Fuel Receiving and Storage (FRS) Area. In 1980, 625 of those assemblies were returned to the utilities that owned them.
1980	The U.S. Congress passed Public Law 96-368, the West Valley Demonstration Project Act (WVDP Act), requiring the Department of Energy (DOE) to be responsible for solidifying the liquid high-level waste (HLW) stored in underground tanks, disposing of the waste created by solidification, and decontaminating and decommissioning the facilities used during the process.
1980	Per the WVDP Act, the DOE entered into a Cooperative Agreement with NYSERDA that established the framework for cooperative implementation of the WVDP Act. Under the agreement, the DOE has exclusive use and possession of a portion of the Center known as the Project Premises (approximately 167 acres). A supplement to the Cooperative Agreement (1981 amendment) between the two agencies set forth special provisions for the preparation of a joint Environmental Impact Statement (EIS).
1981	The DOE and the NRC entered into a Memorandum of Understanding that established specific agency responsibilities and arrangements for informal review and consultation by the NRC. Since NYSERDA holds the license and title to the West Valley site, the NRC put the technical specifications of the license (CSF-1) in abeyance to allow the DOE to carry out the responsibilities of the WVDP Act.
1982	West Valley Nuclear Services (WVNS), a Westinghouse subsidiary, was chosen by the DOE to be the management and operating (M&O) contractor. WVNS commenced operations at the WVDP on February 28, 1982.
1983	In 1983, NYSERDA assumed management responsibility for the SDA and focused efforts to minimize infiltration of water into the trenches. In the 1990s, installation of a geomembrane cover over the entire SDA and a belowground barrier wall were successful in eliminating increases in trench water levels.
1983	The DOE selected the vitrification (VIT) process as the preferred method for solidifying the HLW into glass.
1984	Nonradioactive testing of a full-scale vitrification system was conducted from 1984–1989.
1984	NFS entered into an agreement with the DOE in which the DOE assumed ownership of the remaining 125 fuel assemblies in the FRS Pool and the responsibility for their removal.

**TABLE INT-1 (*continued*)**  
**Historic Timeline of the WNYNSC and the WVDP**

Year	Activity
1986	A large volume of radioactive waste, non-HLW, would result from WVDP activities. Disposal of most of this waste was evaluated in an Environmental Assessment (DOE/EA-0295, April 1986), and a finding of no significant impact was issued. Consistent with a settlement agreement, the DOE temporarily stored the waste on site until disposal alternatives are determined under subsequent EISs.
1987	A decision to potentially dispose of LLW at the Project led to a legal disagreement between the DOE and the Coalition on West Valley Nuclear Wastes and the Radioactive Waste Campaign. It was resolved by a Stipulation of Compromise which states that LLW disposal at the site and the potential effects of erosion at the site must be included in a comprehensive EIS.
1988	In December 1988, the DOE and NYSERDA issued a Notice of Intent in the Federal Register to prepare an EIS in accordance with Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 8-0109 of the New York State Environmental Quality Review Act (SEQRA).
1988	To prepare for VIT, the Integrated Radwaste Treatment System was constructed to process the liquid supernatant from the underground HLW tanks by removing most of the radioactivity in the supernatant, concentrating the liquid, and blending it with cement. The HLW sludge layer was then treated by washing to remove soluble salts. The water containing the salts was also stabilized into cement. About 20,000 drums of cement-stabilized LLW were stored in the aboveground Drum Cell. The process was completed in 1995.
1990	Organic solvent waste was observed in a groundwater monitoring well immediately downgradient of the NDA in 1983. Following characterization of the area, an interceptor trench bordering the northeast and northwest boundaries of the NDA and a liquid pretreatment system (LPS) were built in 1990–1991. The trench was designed to collect liquid that might migrate from the NDA and the LPS was designed to recover free organic product (if any) from the recovered liquid. To date, no organic product has been detected in the interceptor trench water; therefore, the water has been pumped and treated through the LLW treatment system.
1991	The NYS Department of Environmental Conservation (NYSDEC) was authorized by the Environmental Protection Agency (EPA) to administer the Resource Conservation and Recovery Act (RCRA) hazardous waste program, specifically hazardous mixed wastes. In 1991, a RCRA Part A Permit Application for the WVDP was filed with NYSDEC for storage and treatment of hazardous and mixed wastes.
1992	In 1992, the DOE and NYSERDA entered into a RCRA §3008(h) Administrative Order on Consent (Consent Order) with NYSDEC and the EPA. The Consent Order pertained to management of hazardous waste and/or hazardous constituents from solid waste management units at the WVDP. It also required the DOE and NYSERDA to perform a RCRA Facility Investigation at the WNYNSC to determine if there had been a release or if there was a potential for a release of RCRA hazardous constituents.
1993	In 1993, gross beta activity in excess of 1.0E-06 µCi/mL (the applicable DOE Derived Concentration Guide for strontium-90 [Sr-90]) was detected in surface water on the north plateau, in the vicinity of sampling location WNSWAMP. The gross beta radioactivity was determined to be Sr-90.
1994	Extensive subsurface investigations delineated the extent of the Sr-90 plume and determined that the plume originated beneath the southwest corner of the Main Plant Process Building (MPPB) during NFS operations and migrated toward the northeast quadrant of the north plateau. A second lobe of contamination was attributed to the area of former lagoon 1, which was backfilled in 1984.
1995	In 1995, a groundwater recovery system consisting of three wells was installed on the north plateau to extract and treat the Sr-90-contaminated groundwater to minimize plume advancement. In 1999, a pilot-scale permeable treatment wall was constructed to test this passive in-situ remediation technology.
1995	The Vitrification Building shielding was installed in 1991, the slurry-fed ceramic melter was assembled in 1993, and the remaining major components were installed and tested by the end of 1994. In 1995, the Vitrification Facility was completed, fully tested, and "cold operations" began.
1996	The DOE and NYSERDA issued a Draft Environmental Impact Statement (DEIS) for Completion of the WVDP and Closure or Long-Term Management of the WNYNSC. After issuance of the DEIS, the Citizen Task Force was convened to provide additional stakeholder input regarding the WVDP/WNYNSC closure process.

**TABLE INT-1 (*concluded*)**  
**Historic Timeline of the WNYNSC and the WVDP**

<b>Year</b>	<b>Activity</b>
1996	Vitrification operations began in 1996 and continued into 2001, producing a total of 275 10-foot-tall stainless-steel canisters of hardened radioactive glass containing more than 12.2 million cesium/strontium curies. The glass melter was shut down in September 2002.
1996	NYSDEC and the DOE entered into an Order on Consent negotiated under the Federal Facilities Compliance Act for handling, storage, and treatment of mixed wastes at the WVDP.
1996	The Seneca Nation of Indians Cooperative Agreement was signed in 1996 to foster government-to-government relationships between the Seneca Nation and the U.S. government as represented by the DOE.
1999	Vitrification Expended Materials Processing was initiated to begin processing unserviceable equipment from the VIT process. This success helped in developing a Remote-Handled Waste Facility (RHWF) to process large-scale, highly contaminated equipment excessed during decontamination and decommissioning activities.
2000	Restructuring of the work force began. Construction of the RHWF began.
2001	The 125 spent fuel assemblies that remained in storage at the WVDP since 1975 were prepared for transport to the Idaho National Engineering and Environmental Laboratory (INEEL). Two significantly contaminated areas in the MPPB, the process mechanical cell and the general purpose cell, were decontaminated.
2001	The DOE published formal notice in the Federal Register (66 FR 16447) to split the EIS process into (1) the WVDP Waste Management EIS, and (2) the Decommissioning and/or Long-Term Stewardship EIS at the WVDP and the WNYNSC.
2002	The NRC issued "Decommissioning Criteria for the West Valley Demonstration Project (M-32) at the West Valley Site; Final Policy Statement" (67 FR 5003).
2003	The remaining 125 spent fuel assemblies were shipped to Idaho National Engineering and Environmental Laboratory, allowing for decontamination of the FRS to begin.
2004	The RHWF became operational. Major decontamination efforts continued and more than 104,000 cubic feet of LLW were safely shipped for off-site disposal. Footprint reduction began as 20 office trailers were removed. The 6 NYCRR RCRA Part 373-2 Permit Application was submitted to NYSDEC.
2005	In June 2005, the DOE published its final decision on the "WVDP Waste Management Environmental Impact Statement (68 FR 26587)." The DOE implemented the preferred alternative for the management of WVDP LLW and mixed LLW. The decision on transuranic waste was deferred, and the HLW canisters will remain in on-site storage until shipped to a repository.
2005	In November 2005, the WVDP was downgraded to a Category 3 nuclear facility, marking the first time in the site's history that it has been designated the least of the three DOE nuclear facility designations. The categorization is based on amounts, types, and configuration of the nuclear materials stored and their potential risks. Site footprint reduction activities escalated and more than 300,000 cubic feet of LLW were shipped off site for disposal.
2006	An Environmental Assessment (DOE/EA-1552) evaluating the proposed decontamination, demolition, and removal of 36 facilities was issued. Eleven of the 36 structures were removed by the end of 2006, and about 400,000 cubic feet of various waste types were shipped offsite for disposal.
2006	The DOE-WVDP office initiated a collaborative, consensus-based team process, referred to as the "Core Team," that involves NYSERDA, the EPA, the New York State Department of Health, the NRC, and NYSDEC. This team brings individuals with decision-making authority together to resolve challenging issues surrounding the WVDP EIS process and to make recommendations to move the Project toward an "Interim End-State" prior to issuance of the "Final EIS for the Decommissioning and/or Long-Term Stewardship at the WVDP and the WNYNSC."
2007	Demolition and removal of four more structures identified under the DOE/EA-1552 was completed. On June 29, 2007, West Valley Environmental Services LLC was awarded a four-year contract, by the DOE, to conduct the next phase of cleanup operations at the WVDP under Contract DE-AC30-07CC30000. The remaining drums of cemented LLW in the Drum Cell were packaged and shipped to the Nevada Test Site for disposal.
2007	An interim measure to minimize water infiltration into the NDA was initiated. Site surveys and core borings were completed by late 2007, with scheduled 2008 construction of a slurry wall and installation of a geomembrane cap over the NDA.

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